

***GROOV* BOX**

USER'S GUIDE

GROOV BOX USER'S GUIDE

Form 2077-131125—November 2013

OPTO 22
Automation made simple.

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groov Box User's Guide
Form 2077-131125—November 2013

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Automation Made Simple.

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1: Welcome

OPTO 22

groov is Opto 22's web-based operator interface system that is *simple*, *mobile*, and *connects easily* to almost everything.

Simple: *groov* requires only a web browser to build and view interfaces. Because it puts ready-made gadgets at your fingertips and requires zero programming, it's simple to build, deploy, and view effective and 100% scalable operator interfaces.

Mobile: *groov* can be viewed on almost any mobile device or computer regardless of its manufacturer, operating system, or screen size, including smartphones, tablets, PCs, and even smart high-definition televisions. *groov* can augment existing human-machine interfaces (HMIs) and SCADA systems by making important information available at any time and in any location.

Connects easily: You can connect *groov* to Opto 22 controllers directly, or you can connect to devices from other manufacturers through a tag server that supports OPC UA (Unified Architecture). When connected to a tag server you can monitor and control PLCs and PACs such as Allen-Bradley ControlLogix and CompactLogix, Siemens SIMATIC S7, Schneider Electric Modicon, GE PACSystems, and many more.

In addition you can use *groov* with databases, SNMP devices, weather stations, OPC-DA servers, or any device or system supported by your tag server. *groov* gets important data from process control,



OEM machines, and manufacturing systems into operators' hands. (For more information about OPC UA, go to opcfoundation.org/UA.)

Choose Your *groov*

groov is available as either the standalone *groov* Box hardware appliance or the PC-based *groov* Server for Windows software. Also available at reduced cost are versions of *groov* Box and *groov* Server that connect only to Opto 22 devices.

***groov* Box** (p/n GROOV-AT1) is an industrially hardened appliance that comes preloaded with *groov* software, including *groov* Build for building operator interfaces, *groov* View for using the interfaces you've built, and *groov* Admin for administering the Box itself. The *groov* Box communicates over a standard Ethernet network or wireless LAN (local area network), or both. For more information about the *groov* Box, see [form 2077](#), the *groov* Box User's Guide.



***groov* Server for Windows** (p/n GROOV-SVR-WIN) includes *groov* software (*groov* Build for building operator interfaces and *groov* View for using them) and is ready for installation on a Microsoft® Windows® PC. Once installed, *groov* Server runs as a service on your computer. For more information on *groov* Server, see [form 2078](#), the *groov* Server for Windows User's Guide.



Whether you store and serve *groov* software on a *groov* Box or on a computer using *groov* Server for Windows, an operator interface you develop with *groov* can be viewed on almost any mobile device or computer.

About this Guide

This user's guide shows you how to install and set up your *groov* Box, and how to use the *groov* Admin software. *groov* Admin provides the tools to back up and restore your project, update *groov*, set up wired and wireless networking, and more.

For information about *groov* App, see form 2027, the *groov User's Guide*. *groov* App allows you to build, deploy, and view simple, effective, and scalable operator interfaces to monitor and control systems and equipment using computers and mobile devices.

Other *groov* Resources

Resources for *groov* and other related products—such as PAC Project—are also available on the Opto 22 website www.opto22.com.

System Requirements

- An Opto 22 controller—S-series, R-series, or SoftPAC—on the network with firmware R9.2a or newer, and a strategy developed in Opto 22's PAC Control.
- A computer with at least the minimum processor and memory required for your operating system, and Ethernet capability. Additional memory may be required for some configurations.
- High-resolution monitor (minimum 800 x 600).
- Mouse or other pointing device

A Note on Browsers

Thanks to technologies such as HTML5, SVG, and CSS3, modern browsers are now more similar than they are different. Consequently, our browser-based *groov* View and *groov* Build work reliably on a large number of device/OS/browser combinations. We've seen *groov* work on HDTVs, phones of many shapes and sizes, and new devices, and we test them as fast as we can get our hands on them. We can't test every single device/OS/browser version available. But we're happy to recommend those that work well, such as Firefox, Chrome, and Internet Explorer 10. We also encourage you to let us know your experiences with devices you find.

groov Box Communications

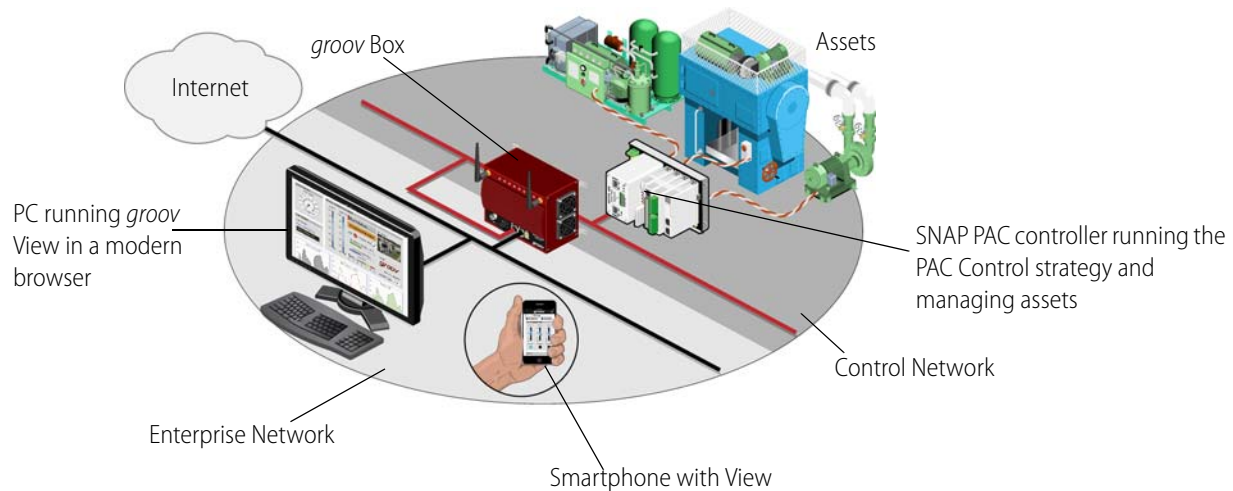
groov uses standard computer networks and protocols. The unit communicates with computer networks over a standard 10/100/1000 Mbps Ethernet network or over an 802.11b, g, or n wireless LAN (local area network), or over both.

With two independent wired Ethernet network interfaces plus an independent wireless interface, the unit gives you the flexibility to monitor devices in hard-to-reach areas and to set up networking suited to your business.

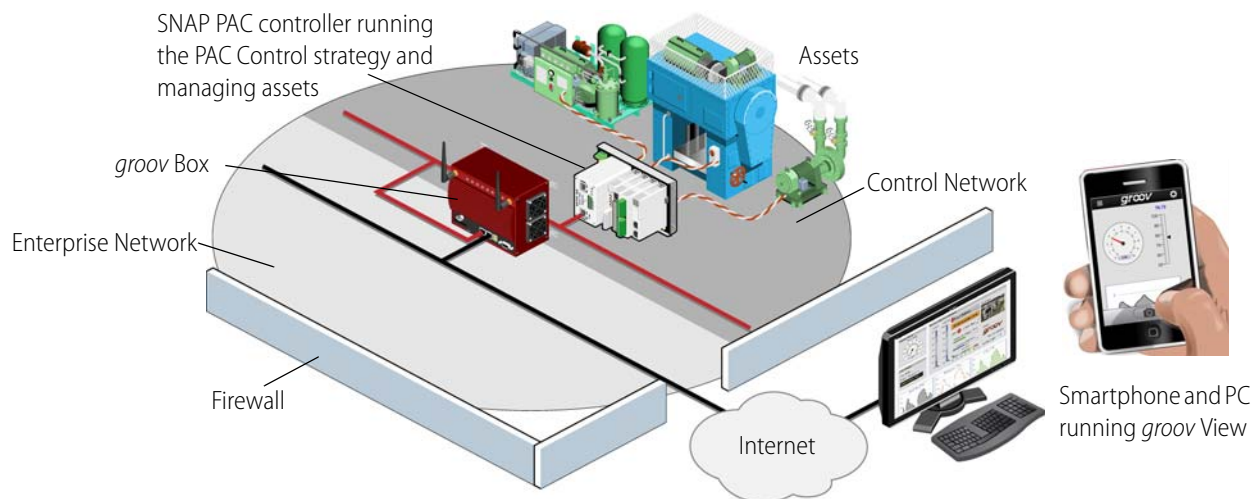


System Architecture

When you first set up *groov*, the PC you use must reside on the same network (subnet domain) as the *groov* Box. In this quick and easy setup, the development PC and smartphone or tablet running View all reside within the same domain as *groov*. The controller can also be on the same network, or it can be on a separate control network as shown here.



(optional) You can also access *groov* on the Internet, outside *groov*'s network. The Secure Sockets Layer (SSL) encrypts data exchanged between your browser and *groov*. A VPN (Virtual Private Network) connection increases security.



What's In This Guide

Here's what is in this user's guide:

Chapter 1: Welcome introduces this user's guide and *groov*.

Chapter 2: Getting Started describes how to get *groov* up and running quickly.

Chapter 3: Powering On, Logging In details how to log in to *groov* Build and *groov* Admin and how to manage SSL certificates.

Chapter 4: Using *groov* Admin describes how to use *groov* Admin to back up and restore *groov*, manage the network connections, access system information, and more.

Chapter 5: Troubleshooting and Q&A provides troubleshooting information and answers questions you might have about *groov*.

Appendix A: Specifications and Dimensions provides technical specifications and *groov* Box dimensions.

Appendix B: Connectors, Indicators, and LEDs describes connector names and what the status and activity LEDs mean.

Appendix C: Maintaining the Fan Filters describes how to clean and replace the fan filters.

Product Support

If you have any questions about *groov*, you can call, fax, or e-mail Opto 22 Product Support.

Phone:	800-TEK-OPTO (800-835-6786) 951-695-3080 (Hours are Monday through Friday, 7 a.m. to 5 p.m. Pacific Time)	<i>NOTE: Email messages and phone calls to Opto 22 Product Support are grouped together and answered in the order received.</i>
Fax:	951-695-3017	
Email:	support@opto22.com	
Opto 22 website:	www.opto22.com	

When calling for technical support, be prepared to provide the following information about your system to the Product Support engineer:

- *groov* Image version and *groov* Admin version. Click the System Information icon in the Admin Quick Start (see [page 27](#)).
- A description of your system equipment:
 - Computer type, speed, memory, and operating system
 - Controller model and firmware version
- A description of the network
- Specific error messages or other diagnostic indications

2: Getting Started

In this chapter you'll find instructions on how to install the *groov* Box and set up the *groov* Admin software.

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What You Will Need

In order to set up your *groov* Box and do the activities in this chapter you will need a computer with a modern web browser on the same network you'll use for the *groov* Box. For the best user experience, we recommend Chrome or Firefox.

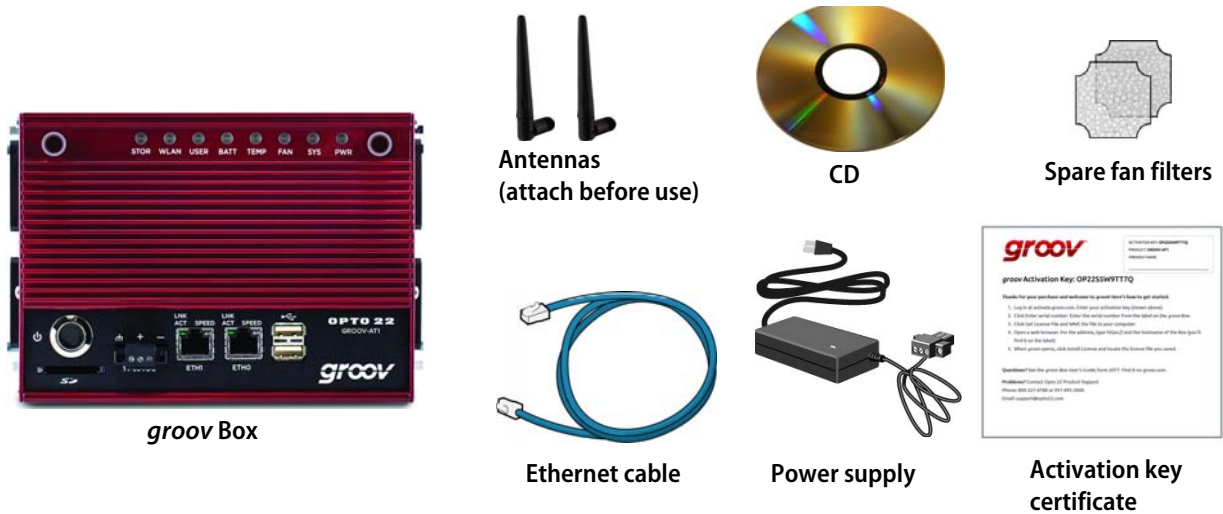
In the Box

These items are included in the box:

- *groov Quick Start*, form 2063
- *groov* Box
- 2 extra fan filters
- *groov* Box wireless antennas
- *groov* CD that includes the *groov User's Guide* (form 2077), the *groov Quick Start* (form 2063), *groov Box User's Guide* (form 2077), and the *groov* Find utility

STEP 1. GET TO KNOW THE GROOV BOX

- Ethernet cable
- Power supply unit
- Activation key certificate



Step 1. Get To Know the groov Box

To set up the groov Box, you'll use the groov Box components shown below. Make sure to peel the label from the Activation Key Certificate and affix it to the top of the groov Box.



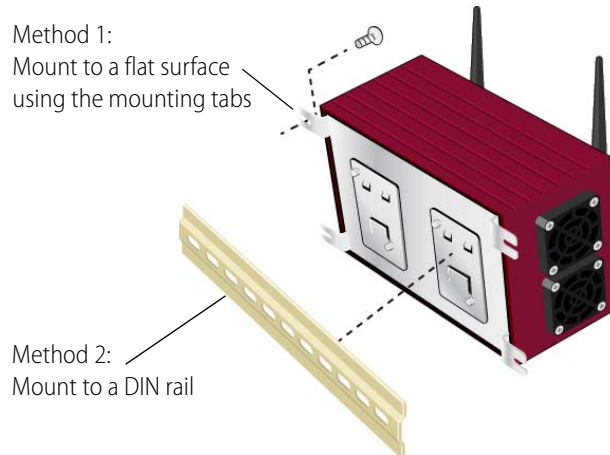
Step 2. Choose a Location

Locate a suitable wall or panel near a standard 120VAC or 240VAC wall outlet and the wired Ethernet network(s) your computer is on. If your computer and controller are on different networks, you can use the two Ethernet connections to connect to both networks. In this case, you connect ETH0 to your computer's network. See also [page 55](#).

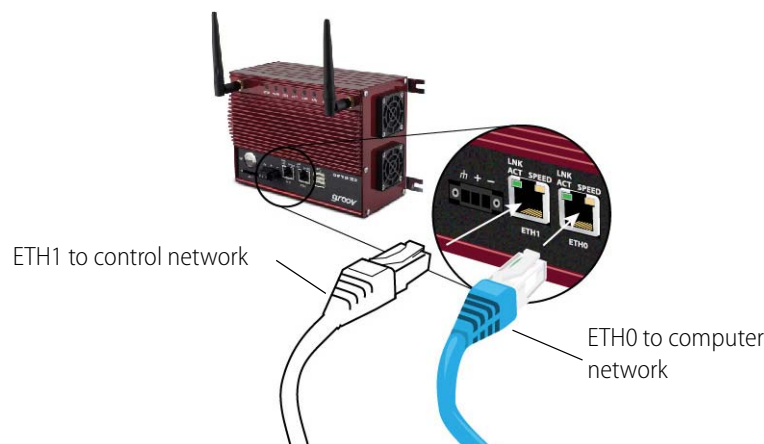
Allow room around the front, top, and sides of the *groov* Box. Air needs to flow freely through the fans on the sides, and you need to be able to see the information on the top.

Step 3. Mount the *groov* Box

You can mount the *groov* Box on a flat surface using the four mounting tabs, or you can mount it on a DIN rail using the DIN rail clips provided on the back of the *groov* Box. Use #8 screws with the mounting tabs. If there will be vibration at the *groov* Box installation site, make sure to use the mounting tabs for a secure installation.



Step 4. Connect to the Network



- a. Connect an Ethernet cable from ETH0 to your computer's network.

IMPORTANT: If ETH0 and ETH1 will be connected to the same subnet, and you have a Dynamic Host Configuration Protocol (DHCP) server on the network, first make sure to configure a static IP address to either ETH0 or ETH1. Otherwise there might be communication errors. See ["Assigning a Static IP Address"](#) on page 27.

groov is designed to work with a network that has a Dynamic Host Configuration Protocol (DHCP) server and a Domain Name Server (DNS). In this case, you do not need to assign an IP address to the *groov* Box; you just plug it in and it's assigned automatically. However, if you do not have a DHCP server, you will need to configure a static IP address. For information, see ["Assigning a Static IP Address"](#) on page 27. If you do not have DNS, you will need to use *groov* Find to log into *groov* (see page 15).

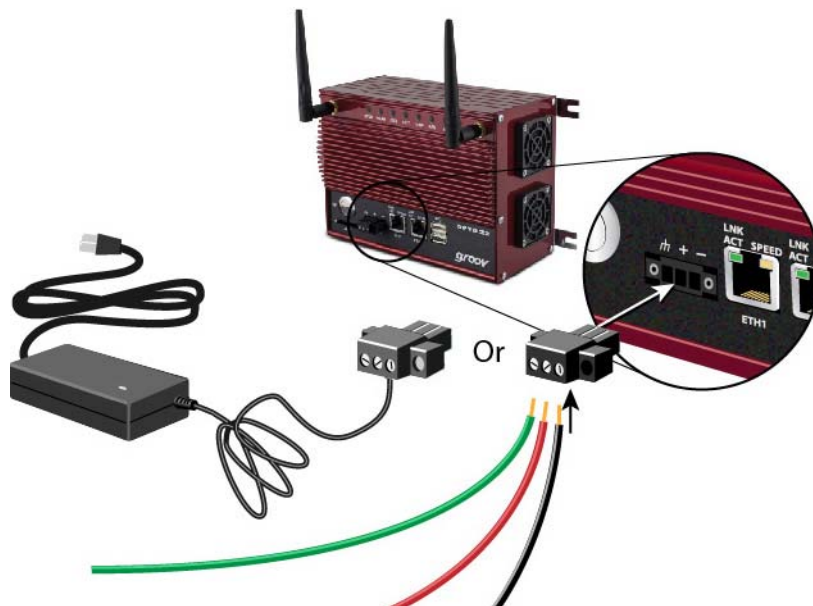
- b. If your controller is on a different network, connect ETH1 to your controller's network.

Step 5. Connect the Power Supply

Your *groov* Box requires a power supply with an output of 14-36 VDC, 24 VDC @ 1 amp. You can use the power supply that comes with the *groov* Box, or provide your own. In either case, we recommend using a UPS (uninterruptible power supply) for backup power and surge protection.

If you are using the power supply that came with the *groov* Box, do the following:

Plug the small connector on the power supply into the terminal marked 14–36 VDC. Plug the other end into a standard 120 or 240 VAC outlet. The LED marked PWR will light solid green.



If you are using your own power supply, do the following:

- a. With the power supply off or unplugged, connect the + (positive) lead from the power supply (normally red) to the + (positive) terminal on the power connector.

CAUTION: Reversing wire polarity may cause damage to your groov Box. This damage is not covered by Opto 22's warranty. If you are not certain about the polarity of the wires on your power supply, check with a meter.

- b. Connect the COM wire from the power supply (normally black) to the – (negative) terminal on the power connector.
- c. Connect a lead from a known earth/chassis ground to the (ground) terminal on the power connector.

Step 6. Turn on the *groov* Box

Briefly press and release the On/Off button. Wait until the SYS LED has stopped blinking and is solid green. Also, take a look at the LNK ACT light for ETH0. If the cable is properly connected, the LNK ACT light should be on or blinking.

Step 7. Open *groov*

You can open *groov* using just your web browser. Or, if you have a Windows computer, you can use *groov* Find (see below). If your network does not have DNS, use *groov* Find.

Using your web browser:

- a. On your computer, open Firefox or Chrome.
- b. Enter https:// and your *groov* Box's hostname as the URL. The hostname is printed on top of the *groov* Box.

For example, if the hostname is opto-01-ab-c2, you type

`https://opto-01-ab-c2`



Make sure you type https. The **s** indicates it is a secure connection.

NOTE: If you've assigned a static IP address to the groov Box, use the IP address instead of the hostname to open groov.

- c. Accept the security warning. Your *groov* data is protected by the Secure Socket Layer 256-bit encryption, so you can safely accept the warning.



For Chrome: Click “Proceed anyway.”



For Firefox:

- Expand “I Understand the Risks.”
- Click Add Exception to open the Add Security Exception dialog box.
- Select “Permanently store this exception.”
- Click Confirm Security Exception.



For Safari: Click Continue.



For Internet Explorer: Click “Continue to this website (not recommended).”

The **Welcome to groov** window opens in your web browser. Now go to [“Step 8. Create New Usernames and Passwords” on page 14](#)

Using groov Find:

If you are using a Windows computer, you can use *groov* Find to locate the *groov* Boxes on your network. If your network does not have DNS, you must use *groov* Find.

- a. Insert the *groov* CD in your CD-ROM drive, then click the link to copy the Find application file to your computer.
- b. Open the Find application file.

A message might appear asking if you want Find to be allowed to make changes to your computer. If it does, click Yes.

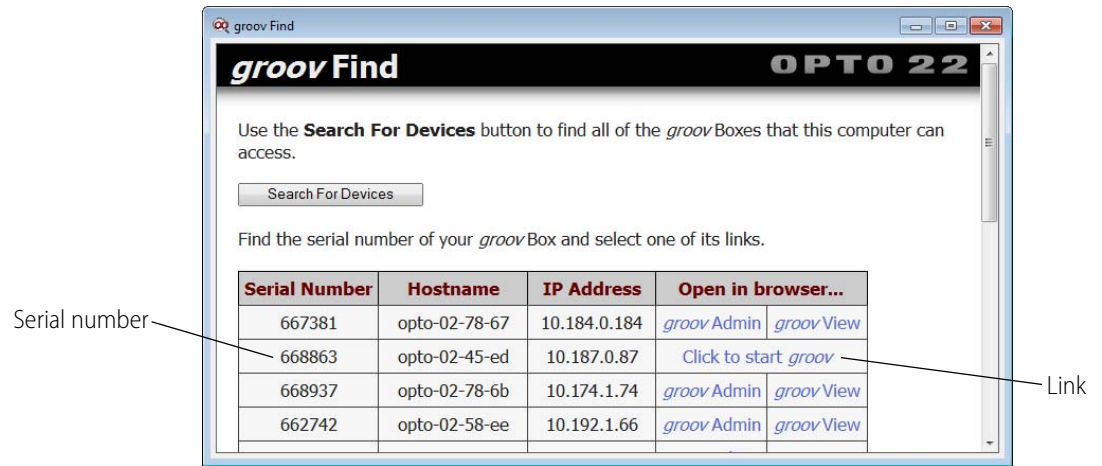
NOTE: If you are using a Windows account that does not have Administrator privileges (such as Guest), a User Account Control dialog box will appear asking for the credentials of an administrator account. To proceed, enter the Administrator User Name and Password. If you do not have this information, contact your IT department.

groov Find opens and automatically searches for *groov* Boxes on the network.

- c. Find the serial number on the top of the *groov* Box.



- d. Locate the matching serial number in Find.



If you do not see the serial number right away, wait 60 seconds and click Search for Devices again.

- e. Click the link "Click to start *groov*."

When your browser connects to *groov* for the first time, the browser will display a *security warning*. This is normal behavior for *groov*.

- f. Accept the security warning. Your *groov* data is protected by the Secure Socket Layer 256-bit encryption, so you can safely accept the warning.



For Chrome: Click "Proceed anyway."



For Firefox:

- Expand "I Understand the Risks."
- Click Add Exception to open the Add Security Exception dialog box.
- Select "Permanently store this exception."
- Click Confirm Security Exception.



For Safari: Click Continue.



For Internet Explorer: Click "Continue to this website (not recommended)."

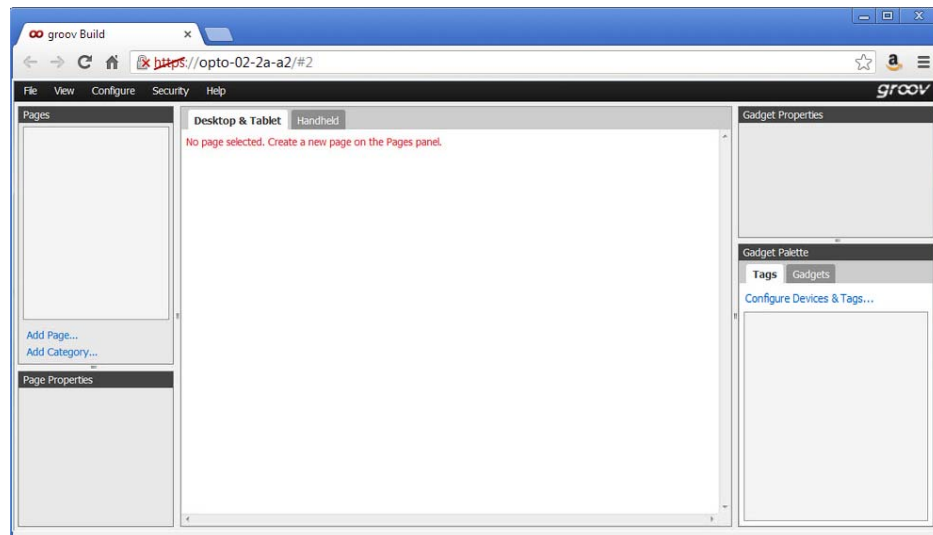
The **Welcome to *groov*** window opens in your web browser.

Step 8. Create New Usernames and Passwords

Follow the on-screen instructions to create usernames and passwords for *groov* Admin and for *groov* Build. The security warning will appear once more; when it does, accept the warning again.

CAUTION: Write down your Username and Password, and keep it in a safe place. You will need this information each time you log in. If you lose your login information, you will have to reset the *groov* Box back to factory defaults which will erase your project. There is no password recovery option.

After you have completed the instructions in **welcome to groov**, *groov* Build opens in your web browser. For information on using *groov* Build, see form 2027, the *groov* User's Guide.



Step 9. Activate Your *groov* Box

From time to time Opto 22 will provide important updates for *groov* as well as optional features for purchase. In order to get *groov* updates or options, you must first activate the maintenance for each *groov* Box.

- a. Get the *groov* Box's serial number.

You'll find it on the top of the *groov* Box, along with the default hostname. (Your serial number will be different from this example.)



- b. Get the activation key printed on a certificate included with your *groov* Box.
- c. Go to activate.groov.com and follow the instructions there to activate the *groov* Box maintenance.
- d. To check for updates at any time, go to manage.groov.com.

3: Powering On, Logging In

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Before using the information in this chapter, install your *groov* Box and set it up on the network. For instructions, see [Chapter 2: Getting Started](#).

Using the On/Off Button

The *groov* Box On/Off button can do the following:

- Turn the *groov* Box on and off
- Restore the *groov* Box to the factory state



Turning On the *groov* Box

1. Check to make sure the PWR LED is on. This means that the *groov* Box is receiving power.
2. Briefly press the On/Off button. Wait until the SYS LED has stopped blinking and is solid green.

CAUTION: If you press the button for longer than four seconds, the groov Box will be restored to default settings. Your project will be erased.

Turning Off the *groov* Box

With the *groov* Box on, briefly press the On/Off button. The SYS LED will blink orange and then turn off. The PWR button will remain on as long as there is power from the power supply.

CAUTION: If you press the button for longer than four seconds, the groov Box will be restored to default settings. Your project will be erased.

Restoring *groov* Box to the Factory State

Restoring the *groov* Box restores the default network settings and erases all user data, including your project. When the process is complete, the Box will send out a DHCP request on ETH0, and you will be able to connect using the default hostname.

CAUTION: When the groov Box is restored to factory default settings, your project will be erased.

1. Check to see that the *groov* Box is turned off, but the PWR LED is on.
2. Press and hold the On/Off button for at least four seconds and until the STOR LED is blinking orange. Then release the button.

Both the SYS LED and STOR LED will be blinking orange at this point. When both the SYS LED and STOR LED stop blinking orange, the procedure is finished.

3. Briefly press the On/Off button to turn off the *groov* Box, then briefly press it again to turn the *groov* Box back on so that you can log in.

Opening Admin

Using *groov* Admin you can back up and restore your projects and project settings, update firmware, set up wired and wireless networking, and more.

To open a *groov* Admin, you need to know the default hostname, which is printed on the top of the *groov* Box. If you want to change the hostname, see [“Changing the Hostname, DNS Servers, or IPv4 Gateway” on page 28](#). To use Admin, see [Chapter 4: Using groov Admin](#).

To open *groov* Admin using a URL:

In your web browser, enter `https://hostname:10000/`

For example:

`https://opto-01-ab-c2:10000/`

hostname port 10000

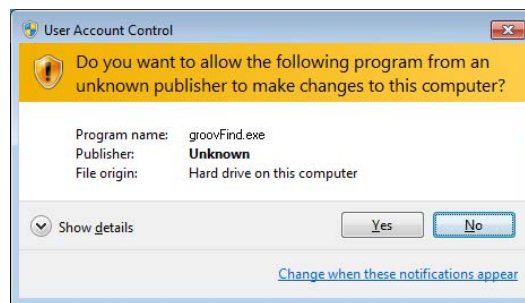


To open Admin using **groov Find** (Windows only)

groov Find is a utility included on the **groov** CD that locates your **groov** Box on the network and provides a link so that you can access the **groov** applications. It is especially useful if you have multiple **groov** Boxes because it finds and lists them all.

1. Open **groov Find**.

If you have User Account Control (UAC) turned on, a message appears asking if you want Find to be allowed to make changes to your computer.



*NOTE: If you are using a Windows account that does not have Administrator privileges (such as Guest), you will need to enter the Administrator User Name and Password in order to use **groov Find**. If you do not have this information, contact your IT department.*

2. Click Yes.

*NOTE: Clicking Yes permits Find to have temporary administrative privileges to create an additional temporary IP address for each network interface on the computer. This enables Find to locate a **groov** Box on a network that does not have DNS and DHCP.*

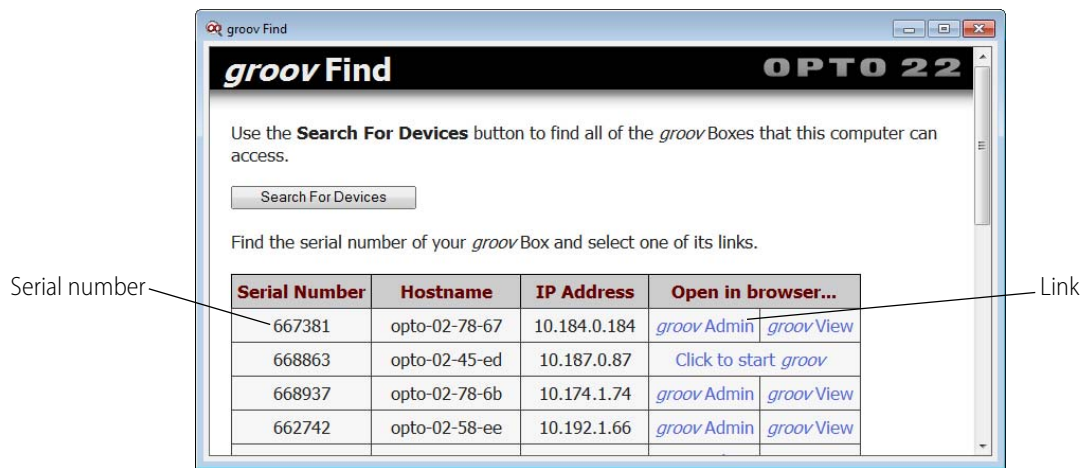
*If the network does not have DNS and DHCP, you will need to assign a static IP address to the **groov** Box in order to maintain communication. (See “[Assigning a Static IP Address](#)” on page 27.) If the network does have DNS and DHCP, the temporary IP address is not used and is removed when you exit Find.*

groov Find opens and automatically searches for **groov** Boxes on the network.

3. Find the serial number on the top of the *groov* Box.



4. Locate the matching serial number in Find.



5. Click the link *groov* Admin.

The **Welcome to groov** window opens in your web browser.

If you have already created a new user and password in *groov* Admin, the *groov* Admin and *groov* View links will be available instead. In that case, click *groov* Admin.

Next see “[Logging in to Admin](#)” (below).

Logging in to Admin

CAUTION: Write down your Username and Password, and keep it in a safe place. You will need this information each time you log in. If you lose your login information, you will have to reset the *groov* Box back to factory defaults which will erase your project. There is no password recovery option.

To log in normally:

1. Enter the *groov* Admin account Username and Password.

A screenshot of a web form titled "Login to groov Admin Utility". The form has a blue header bar with the title. Below the header, it says "You must enter a username and password to login to groov Admin." There are two input fields: "groov Admin Username" with the text "Saleem" entered, and "Password" with a masked password of ten dots. A "Login" button is at the bottom right of the form.

2. Click the Login button.
groov Admin appears.

Accepting the Security Warning

groov uses the Secure Sockets Layer (SSL) to protect your data by encrypting data exchanged between your browser and the *groov* Box. When a device attempts to access *groov*, your browser will issue a security warning unless the appropriate SSL security certificate is installed on the device.

If your computer resides in the same domain as the *groov* Box, you can safely accept the warning because your data is protected by SSL's 256-bit encryption. However, if you want to avoid seeing the security warning, you can install the self-signed certificate on your computer and other devices that access *groov*.

If your computer or other device will access *groov* applications from outside *groov*'s network or over the Internet, Opto 22 strongly recommends you obtain an SSL Certificate from a third-party company that is authorized to confirm your user's ID.

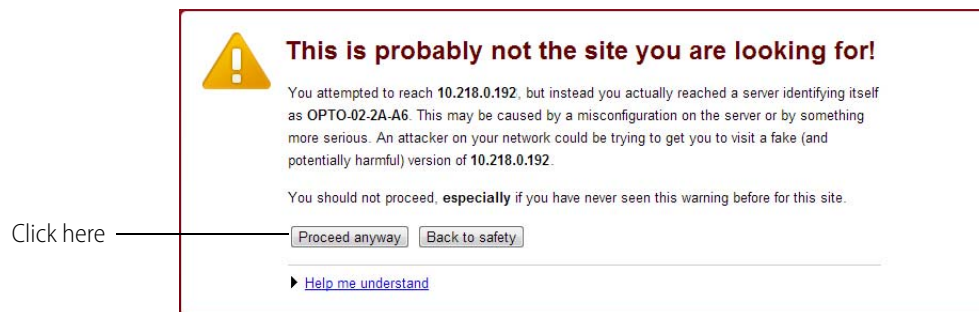
See ["Installing an SSL Certificate on a Computer" on page 43](#) and ["Installing an SSL Certificate on a Mobile Device" on page 45](#).

To accept the security warning, see one of these sections:

- ["For Chrome" on page 21](#)
- ["For Firefox" on page 22](#)
- ["For Safari" on page 22](#)
- ["For Internet Explorer" on page 23](#)

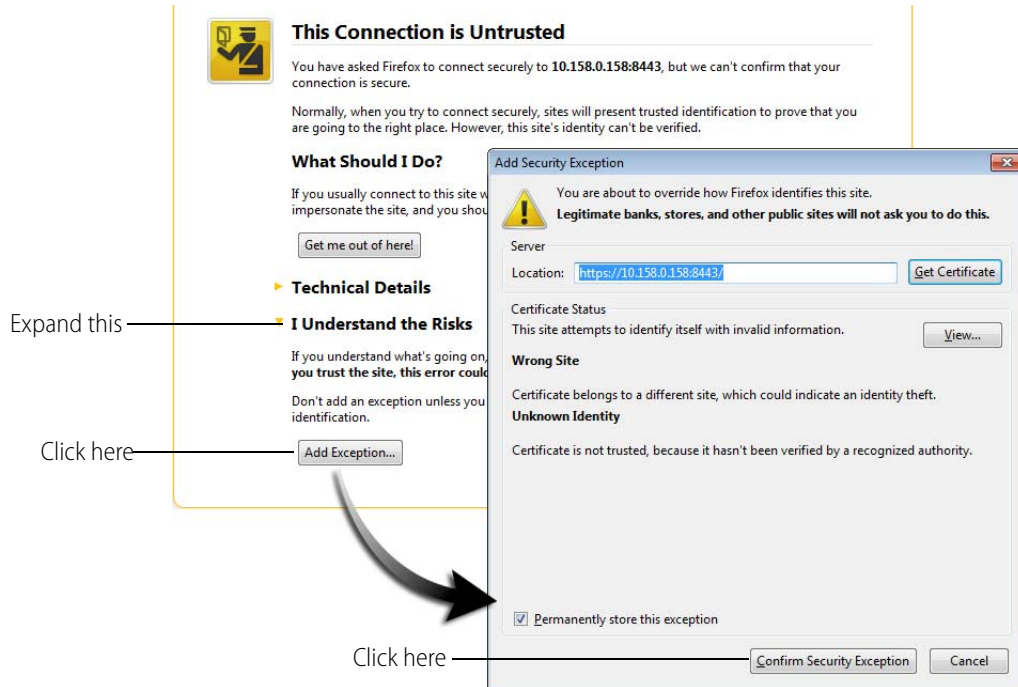
For Chrome

1. Click "Proceed anyway."



For Firefox

1. Expand "I Understand the Risks."
2. Click Add Exception to open the Add Security Exception dialog box.
3. Select Permanently store this exception.
4. Click Confirm Security Exception.



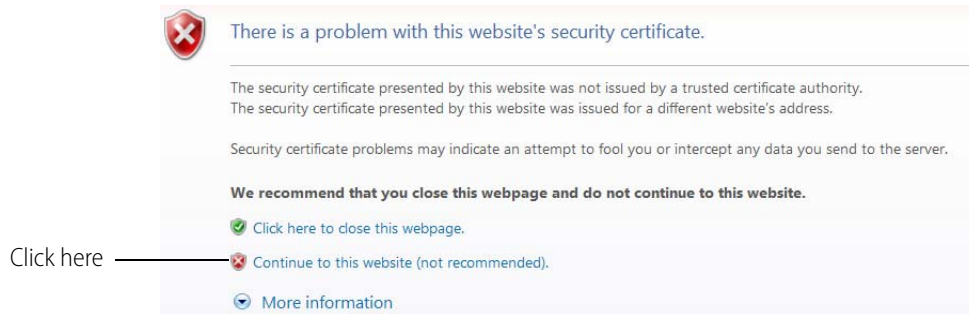
For Safari

Click Continue.



For Internet Explorer

Click “Continue to this website (not recommended).”



Opening *groov* App (*groov* Build and View)

Click *groov* App in the menu tree on the left side of the screen. For information on how to use *groov* Build and View, see form 2027, the *groov* User's Guide.



4: Using *groov* Admin

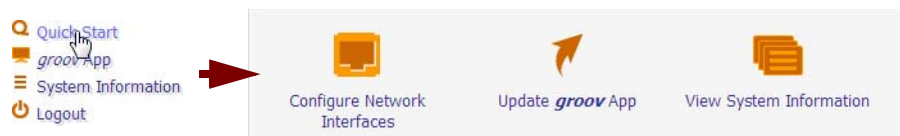
Using *groov* Admin you can back up and restore your projects and project settings, update firmware, set up wired and wireless networking, and more.

In this chapter:

Using Admin's Quick Start	27
Configuring Network Connections.....	27
Configuring Wireless Communications.....	30
Updating groov App (Build and View).....	33
Changing the Username and Password	48
Checking System Information	48
Backing Up groov	33
Restoring groov	34
Checking Hardware Status	49
Upgrading groov Admin	36
Setting the System Time	50
Restarting the groov Box.....	37
Using an SSL Certificate from a Certificate Authority	37
Generating Your Own Self-Signed Certificate	42
Installing an SSL Certificate on a Computer	43
Installing an SSL Certificate on a Mobile Device	45

Using Admin's Quick Start

Admin's Quick Start links to system settings that may need configuration out of the box. You can access Quick Start by clicking on Quick Start in the Admin menu tree.



Configure Network Interfaces

Configure IP settings for the wired and wireless Ethernet interfaces: ETH0, ETH1, and WLAN0. See [“Configuring Network Connections” on page 27](#).



Update groov App

Check to see if you have the latest Build and View installed on your system. See [“Updating groov App \(Build and View\)” on page 33](#).



View System Information

Check system information, see usage statistics, and apply security updates. See [“Checking System Information” on page 48](#).

Configuring Network Connections

Depending on your network requirements, you can configure the groov Box network connections to have a static, fixed IP address, or the address can be assigned by a DHCP server. You can also set groov Box on a wireless network.

NOTE: If you are using a laptop computer to assign an IP address, make sure you disable Windows' Internet Connection Sharing (ICS). If you don't, the laptop will act like a router and assign a dynamic address.

The two independent Ethernet connectors (ETH0 and ETH1) have separate IP addresses that can be used to segment a control system's network from the enterprise LAN.

This section includes the following topics:

- [“Assigning a Static IP Address” on page 27](#)
- [“Changing the Hostname, DNS Servers, or IPv4 Gateway” on page 28](#)
- [“Configuring ETH1 for the Control Network.” on page 29](#)
- [“Configuring Wireless Communications” on page 30](#)

Assigning a Static IP Address

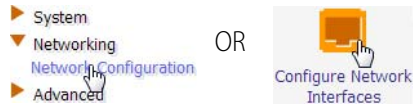
NOTE: Only assign a static IP address if you do not have a DHCP server on the network.

You'll need to get the following networking information from your IT department:

- **IPv4 address**—A unique, fixed (static) IP address.
For example: 172.18.234.1
- **Netmask**—Mask that divides the local network into subnetworks.

For example: 255.255.225.0

1. In *groov* Admin, select Networking > Network Configuration, or click the Configure Network Interfaces icon in Quick Start.



2. Click the wired Ethernet connection you want to configure.

NOTE: Use ETH0 as the main connection. Only use ETH1 if you have segmented networks.

Network Configuration		
To edit an Ethernet interface, click on the name.		
Name	Type	MAC Address
ETH0	Ethernet	00:20:0C:30:AF:F2
ETH1	Ethernet	00:A0:3D:00:9D:73
WLAN0	Wireless Ethernet	24:77:03:BB:00:C4



Edit ETH0 Interface

Boot Time Interface Parameters	
Name	ETH0
IPv4 Address	☐ Disabled ☐ From DHCP ☒ Static configuration
	IPv4 Address
	Netmask

Static IP address

3. Select Static configuration and enter a static IP address and Netmask.
4. Click Save.

Changing the Hostname, DNS Servers, or IPv4 Gateway

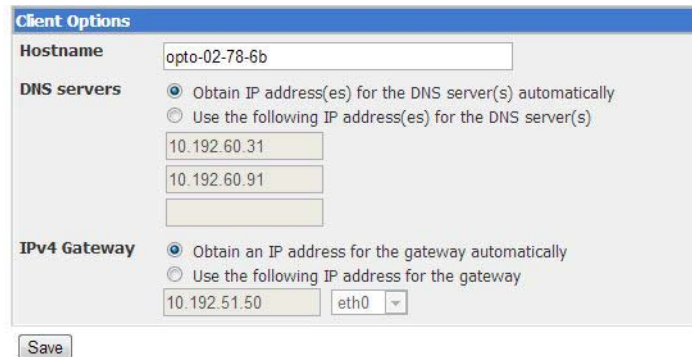
In order to identify the *groov* Box more easily on the network, you might want to change the hostname from the default. And, depending on your network setup, you might need to change the DNS Servers or IPv4 Gateway.

NOTE: Keep in mind that any changes to this interface may make your system inaccessible via your current wired or wireless connection. Be sure to write down a new hostname or any other changes.

1. Select Networking > Network Configuration, or click the Network Interfaces icon in Quick Start.



2. In the Client Options dialog box, change the hostname, DNS servers, or IPv4 Gateway as necessary.



NOTE 1: A hostname cannot have spaces or special characters.

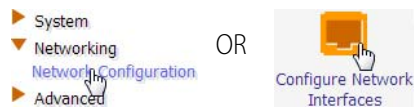
NOTE 2: Any changes to this interface may make your system inaccessible via your current wired or wireless connection. Be sure to write down a new hostname or any other changes.

3. Click Save.

Configuring ETH1 for the Control Network.

If your computer is on a different network than the control network, you need to configure ETH1 by assigning it an IP address and subnet appropriate for the control network.

1. In *groov* Admin, select Networking > Network Configuration, or click the Configure Network Interfaces icon in Quick Start.



2. Click ETH1.

Network Configuration

To edit an Ethernet interface, click on the name.

Name	Type	MAC Address	IPv4 Address
ETH0	Ethernet	00:20:0C:30:B6:5A	10.192.1.108
ETH1	Ethernet	00:A0:3D:02:2A:A6	None
WLAN0	Wireless Ethernet	00:26:C7:22:A6:A6	None



Edit ETH1 Interface

Boot Time Interface Parameters

Name: ETH1

IPv4 Address: ☐ Disabled ☒ From DHCP ☐ Static configuration

IPv4 Address:

Netmask:

3. If the network has DNS and DHCP, select “From DHCP.” If it doesn’t, enter a static IP address and Netmask. If you are using static addresses, ETH1 must be different from ETH0.
4. Click Save.

Configuring Wireless Communications

You can configure the *groov* Box to connect to a wireless network through an access point using the 802.11b, 802.11g, and 802.11n protocols.

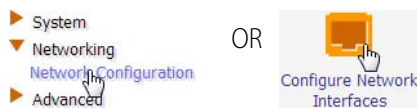
Before you begin, get the following information from your IT Department:

SSID—Name of the wireless network

Security—Encryption type (WPA or WPA2) and network key input type (hex or ASCII)

Password—To access the wireless network

1. With the *groov* Box connected via ETH0, in Admin select Networking > Network Configuration, or click the Configure Network Interfaces icon in Quick Start.



2. Click WLAN0.

Network Configuration

To edit an Ethernet interface, click on the name.

Name	Type	MAC Address	IPv4 Address
ETH0	Ethernet	00:20:0C:30:B6:5A	None
ETH1	Ethernet	00:A0:3D:02:2A:A6	None
WLAN0	Wireless	00:26:C7:22:A6:A6	None



Edit WLAN0 Interface

Enter Wireless Network Information

Network Name (SSID)

Encryption Type

Network Key Type

Network Key

None

ASCII/Passphrase

Boot Time Interface Parameters

Name

IPv4 Address

No address configured

From DHCP

Static configuration

IPv4 Address

Netmask

Save

3. Enter the Network Name (SSID)

The SSID is a string from 1 to 32 characters used to uniquely identify the wireless network. This should match the SSID of the access point you want to connect to.

NOTE: If the SSID contains one or more spaces, enclose the SSID with quotation marks. For example, enter "Opto 22" instead of Opto 22.

4. Select the Encryption Type.

This is the type of encryption used to encrypt any packet sent or received between the access point and the *groov* Box.

- **None**—No encryption used.
- **WEP64**—Use WEP encryption with a 5 digit ASCII or 10 digit hexadecimal key. WEP has been deprecated by IEEE and should not be used in new installations.
- **WEP128**—Use WEP encryption with a 13 digit ASCII or 26 digit hexadecimal key.

NOTE: WEP is not secure and has been deprecated by the Institute of Electrical and Electronics Engineers (IEEE). Do not use WEP in new installations unless it is the only option available. Use WPA or WPA2 instead.

- **WPA**—Use TKIP encryption (RC4) with an 8 to 63 digit ASCII or 64 digit hexadecimal key.
- **WPA2**—Use CCMP encryption (AES) with an 8 to 63 digit ASCII or 64 digit hexadecimal key.

5. Choose the Network Key Type.

Select ASCII or Hexadecimal keys. Typically, WEP uses hexadecimal keys and WPA uses ASCII keys.

6. Enter the Network Key.
Use the key for the Encryption Type selected above. This is a write only field.
7. In the Boot Time Interface Parameters, select From DHCP.

Normally, the DHCP server assigns an IP address. However, if no DHCP server is present, a static IP address is automatically assigned by Admin.

8. Click Save.
Wait till you see the following message.

Network Configuration

Restarting network services. Please wait...Finished

[Back](#)

Congratulations. You're connected!

9. If ETH0 and WLAN are on the same subnet, disconnect the cable from ETH0.
You need to disable ETH0 because *groov* Box will continue to communicate over ETH0 as long as it is connected on the same subnet and enabled. *However, if you are using a control network and enterprise network, and ETH0 is on a different subnet, you can leave it connected.*
10. Disable ETH0 as follows:
 - a. Click ETH0.
 - b. Select Disabled, then click Save.

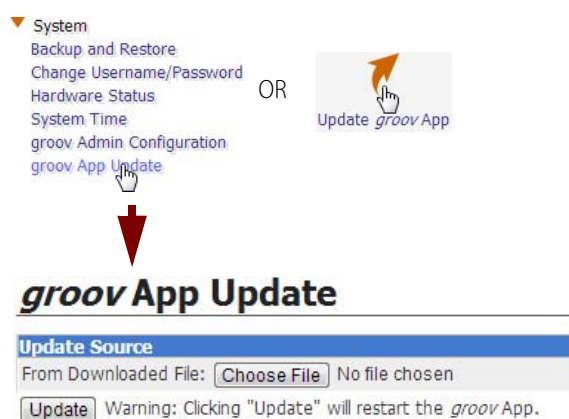
- c. Click the Back button, and notice that ETH0 is disabled (Down) and WLAN0 is now enabled (Up).

Name	Type	MAC Address	IPv4 Address	Netmask	IP Configuration	Link Status
ETH0	Ethernet	00:20:0C:30:B6:5A	None	None	From DHCP	Down
ETH1	Ethernet	00:A0:3D:02:2A:A6	None	None	From DHCP	Down
WLAN0	Wireless	00:26:C7:22:A6:A6	None	None	From DHCP	Up

Updating *groov* App (Build and View)

Use the Update *groov* App option to update *groov* Build and View. Make sure to save any changes in your project before updating the application so that they will still be there after the update takes effect. If the update is successful, the application will restart automatically.

1. Make sure the *groov* Box is activated. See “Step 9. Activate Your *groov* Box” on page 14.
2. Go to manage.groov.com and follow directions to download and save the latest *groov* Application update to your computer.
3. Under System in the menu tree, select *groov* App Update, or click Quick Start and then the Update *groov* App button.



4. Click Choose File, find the downloaded update file, and then click Open.
5. Click Update.

The application is downloaded, installed, and restarted automatically.

***groov* App Update**

```
Downloading (22.91 MB) ..
  Received 1024 bytes (0 %)
  Received 2.29 MB (10 %)
  Received 4.58 MB (20 %)
  Received 6.87 MB (30 %)
  Received 9.16 MB (40 %)
  Received 11.46 MB (50 %)
  Received 13.75 MB (60 %)
  Received 16.04 MB (70 %)
  Received 18.33 MB (80 %)
  Received 20.62 MB (90 %)
  Received 22.91 MB (100 %)
.. download complete.

Executing Update...
```

When the operation is complete, a success message appears.

Backing Up *groov*

During backup, the project components you select are saved to a backup file on your computer or to a USB flash drive. You should back up *groov* frequently. There is no automatic backup.

To restore *groov* from the backup file, see [“Restoring groov” on page 34](#).

1. If you are backing up to a USB flash drive, insert the device into *groov* Box now.
2. In the Admin menu tree, click System, and then click Backup and Restore.



3. Select the Backup tab.



4. Select the components you want to back up.

groov (Build, View, projects) saves your *groov* App (Build and View) project.

Ethernet/Wireless Settings saves any settings configured for ETH0, ETH1, and the wireless network. This includes IP, Subnet, Gateway, Hostname, SSID, Wireless Network Key, etc.

5. Select where you want to save the backup file.

Download to PC saves the backup file to your computer.

Save to USB Flash Drive saves the backup file to a USB Flash drive. Make sure there is only one USB Flash drive installed. Otherwise it might not save the backup file to the intended drive.

NOTE: If you are backing up to a USB flash drive, and you did not insert the memory device into groov Box in step 1, the USB option will not be available. To make the option available, insert the memory device and then click Backup/Restore in the menu tree again.

6. Click Backup, then wait while the backup file is downloaded to your computer.
7. If you are using a USB flash drive, click the Eject button and remove the device.

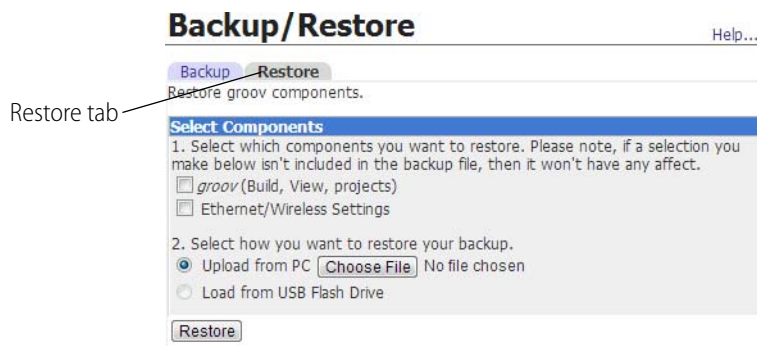
Restoring *groov*

Use the following instructions to restore *groov* components from a backup file saved on a computer or USB flash drive.

1. If the backup file you want to restore is on a USB flash drive, insert the USB flash drive now.
2. In the menu tree, click System, and then click Backup and Restore.



3. Select the Restore tab.



4. Select the components you want to restore.

groov (Build, View, projects) restores the *groov* software and the projects you've built in *groov*.

If *groov* App was not included in the backup file, then this selection will have no effect.

Ethernet/Wireless Settings restores any settings configured for ETH0, ETH1, and wireless, including IP addresses, subnets, gateway, hostname, SSID, and so on. If the Ethernet/Wireless Settings backup was not included in the backup file, then this selection will have no effect.

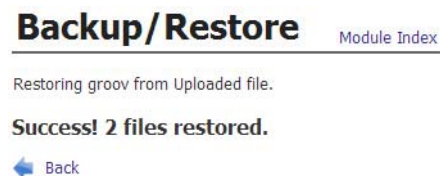
5. Select where you want to restore the backup file from.

Upload from PC restores *groov* from your computer. Click Choose File to select your backup file.

Load from USB Flash Drive restores *groov* from a USB Flash drive. Make sure there is only one USB Flash drive installed so that you access the intended drive. Click the Choose File button to select your backup file.

6. Click Restore, and then wait while the files are uploaded.

When the files are restored successfully, the following message appears.



7. If you are using a USB flash drive, click the Eject button to eject the device.

NOTE: Make sure to eject your USB Flash drive before removing it.

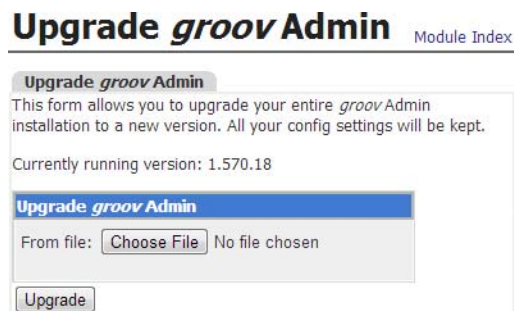
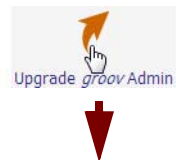
Upgrading *groov* Admin

You can upgrade your entire *groov* Admin from an application update downloaded from the Opto 22 website. All of your configuration settings will be kept.

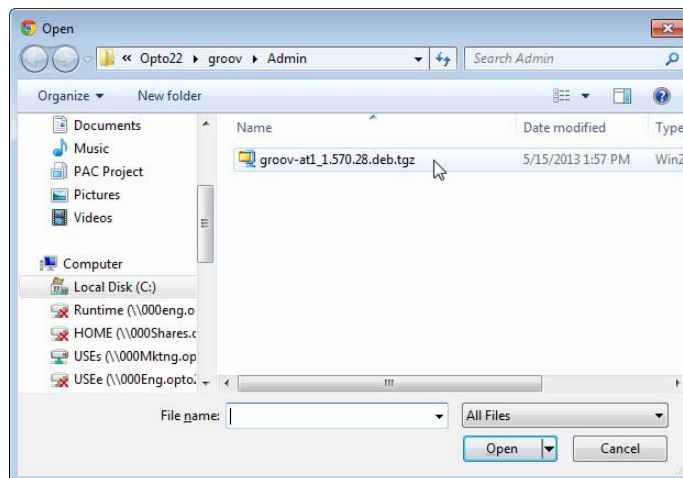
1. Go to manage.groov.com and follow directions to download and save the *groov* Admin update file to your computer.
2. Select System > *groov* Admin Configuration.



3. Click Upgrade *groov* Admin.



4. Click Choose File to locate the *groov* Admin software update file on your computer.
5. Highlight the file, and click Open.



6. Click Upgrade.

The application is downloaded, installed, and restarted automatically.

Restarting the *groov* Box

If for some reason you need to restart the *groov* Box, during the restart all users will be disconnected and you won't be able to continue working in *groov* Build.

To restart the *groov* Box hardware:

1. Select System > *groov* Admin Configuration.



2. Click the Restart *groov* Box button.



During restart, you'll notice the LED lights on the *groov* Box go off and then come back on. While the *groov* Box is restarting you cannot continue working in *groov*. All users will be disconnected. The *groov* applications will automatically restart once the *groov* Box has fully restarted and the SYS LED has stopped flashing.

Using an SSL Certificate from a Certificate Authority

If *groov* is installed on a network that is exposed to the Internet, Opto 22 strongly recommends obtaining an SSL certificate from a third-party vendor called a *certificate authority*. When installed on *groov* and the devices that access *groov*, the certificate validates the connection between the user and *groov* Box, and it alerts users if they are re-directed to another *groov* Box on a different network. So long as you stay connected directly to *groov* on a secure connection (using https) you are protected from a [man-in-the-middle attack](#).

The cost of a certificate from a certificate authority ranges from free to \$300 or more, depending on the features and company you buy them from. Please work with your IT department if you choose this option.

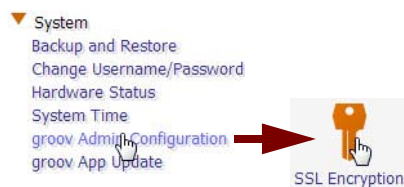
This section includes the following topics:

- [“Creating a CSR File” on page 38](#)
- [“Providing Information to a Certificate Authority” on page 39](#)
- [“Uploading an SSL Certificate to groov” on page 40](#)

Creating a CSR File

When applying for an SSL certificate you will need to create a CSR (Certificate Signing Request) and submit it to the certificate authority. Before you create the CSR, contact the certificate authority you want to use; you must follow the certificate authority's procedures for filling out the form in *groov* Admin.

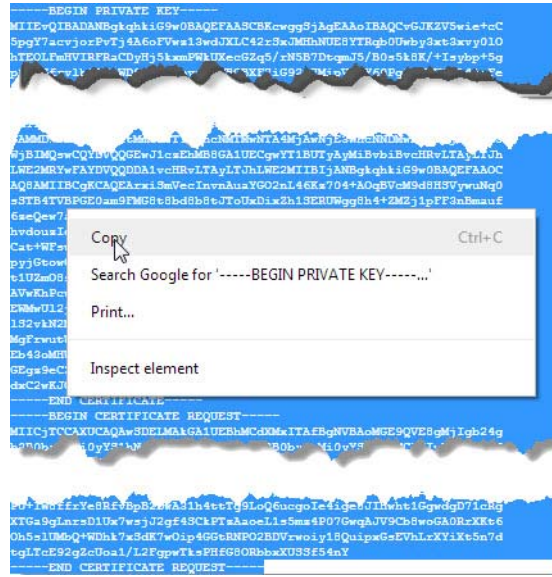
1. In *groov* Admin, select System > *groov* Admin Configuration, then click SSL Encryption.



2. Click the Create certificate tab.

SSL Encryption

3. Enter information in the following *required* fields:
 - **Server name:** Also known as the Common Name. The Fully Qualified Domain Name (FQDN) associated with the SSL Certificate.
 - **Country code:** The 2 digit code of the country.
See <http://www.digicert.com/ssl-certificate-country-codes.htm> for a list of codes.
 - **RSA key size:** Encryption key size of the SSL Certificate. 2048 is the current industry recommendation.
 - **Days before expiry:** How long the SSL Certificate will be good for, in days.
4. Enter information in the *optional fields* as desired, including Email address, Department, Organization, City or locality, and State.
5. Click Create Now to create a block of text that includes the private key, SSL certificate, and certificate request.
6. Drag your mouse to highlight the entire body of text, including all of the dashes at the beginning and end and copy the text to the clipboard.



7. Paste the text into a text file and save the file in convenient location on your hard drive. Or, paste the text into an email and send it to yourself.
8. Refresh your browser and accept the security warning again.
This is necessary because the process creates a new SSL key and a new self-signed certificate.

Providing Information to a Certificate Authority

When you apply for an SSL certificate from a Certificate, you will need to send them some of the information captured in the previous section, [“Creating a CSR File” on page 38](#). If you have not yet created a CSR file, do this now.

When filling out a form for a certificate authority, keep in mind that an SSL certificate can be used with any operating system. If you are asked to select an operating system, you can select “other” if that is an option, but it’s OK to select some other operating system. The important thing is to request that the SSL certificate is in the PEM format, because this is what *groov* requires.

1. Open the text file or email you created previously in [“Creating a CSR File” on page 38](#).

2. Copy the CSR portion of the text to the clipboard. That's the section that starts with BEGIN CERTIFICATE REQUEST. Make sure to include all of the dashes at the beginning and the end shown.

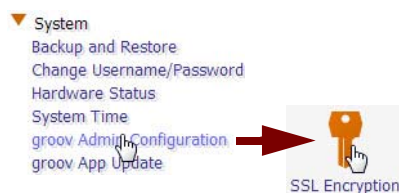
```
-----BEGIN CERTIFICATE REQUEST-----
MIICjTCCAXUCAQAwSDELMakGA1UEBhMcdXMxITAfBgNVBAoMGE9QVE8gMjIgb24g
b3B0by0wMi0yYS1hNjEwMBQGA1UEAwwNb3B0by0wMi0yYS1hNjCCASIdQYJKoZI
hvcNAQEBBQADggEPADCCAQoCggEBAPnEPMiUKONk5YKpt4jw183qShIKHpPOIbE
c3D4IpSa0eliPjbyIxsesY68DmqcXEvPXzSxyjeFVHKgDdOgrQIVhrAtUWn4aLCU
sNI9GbccCOft1dLRxxceyI1DeVQD5KI6DR2xCGnqvMwpc8tzbJksYWroPjCRFwVi7
V5oG405YGesqxBAVKiQBRyjTJUkKDu/HGb5WtVYUoieoguLlnhnttpH71Kk2i2+K
ZgXss8W017v9/I4nsc9sFTq8Iclg9G9t8f8jX+846UfVmeu2ExYzbz3dvTJF6mzC
z9mL5Q5Sy6R2T56ksJGM2GVAQo9sfHcgjdYJtBAEpM9nYXfDgq8CAwEAAaAAMA0G
CSqGSIb3DQEBBQUAA4IBAQCvRm0AQVeMyj6LC7YBLCP5iGnlFM++PH3rzjwrJi2b
rOdGstAeYLMewo+XU/8G5pMojnwhfvBnBbukovA7gi77my0JBvQPLJBQ8u9GQ1EU
GY7r19gcn9uncW6FzkH0WNkvCC6Ps5lqPUgcBQE9+/aI10MRWNdwVLVZn21HKYMH
+H/8dPftb8UzoHvHBUNZGSWPaJwrdnO8vdLtOuPl/TBuOKIDTmqjYoUANTyjQnc
U745b/kU8RQuNsyyvk6aFmNP7oWgIou7CgWQ09ZfFcEGATn3+QDXH15tlpYOGljMM
7UD2Y6uE9s5saxv2ME6V2BAP6V6k8DcSWDq78NhQcwkj/X
-----END CERTIFICATE REQUEST-----
```

3. Provide the text to the certificate authority in whatever form they require, whether it's a text file or just text pasted into a text field.
4. Finish the transaction with the certificate authority and receive your new SSL certificate. Remember, the certificate must be in the PEM format.

Uploading an SSL Certificate to groov

The Upload certificate form allows you to upload a PEM format SSL private key and certificate for your *groov* Box to use.

1. In *groov* Admin, select System > *groov* Admin Configuration, then click SSL Encryption.



- Click the Upload certificate tab on the SSL Certificate page.

SSL Encryption

Module Index

Current certificate Create certificate **Upload certificate**

This form allows you to upload an existing PEM format SSL private key and certificate for your *groov*Box to use.

Upload existing key

Private key text

Or from upload file No file chosen

☒ Combined with private key ☐ Entered below ..

Certificate text

Or from upload file No file chosen

☒ No chained certificate ☐ Entered below ..

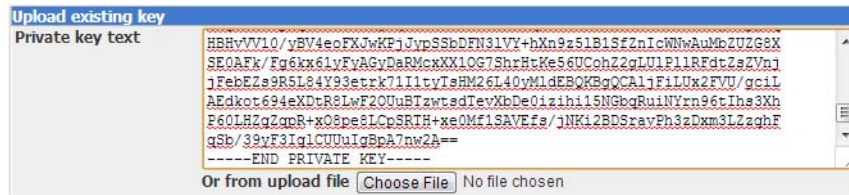
Chained certificate text

Or from upload file No file chosen

- Open the text file or email you created previously. See ["Creating a CSR File" on page 38](#).
- Copy the top portion of the text to the clipboard. Start with the first dash preceding BEGIN PRIVATE KEY, and include all of the dashes after END PRIVATE KEY.

```
-----BEGIN PRIVATE KEY-----
MIIEvwIBADANBgkqhkiG9w0BAQEFAASCBBkwggSlAgEAAoIBAQD5xDzIlCjjZOWC
qbeI8LZfn6koSCh6TziGxHNw+CKUmtHtYj428iMbHrGOvA5qnFxLz180sco3hVRy
oA3ToK0CFYawLVFp+GiwLDSPRm3Ajn7dXS0ccXHsiJQ31UA+SiOg0dsQhp6rzMK
XPLc2yZLGFq6D4wkRcFYuleaBuNOWBrKsQUAF8okAUco0yVJCg7vxxm+VrVWFKIn
vLi5Z4Z7baRt8SpNcmfimYF7LPftNe7/fvQIT7HPbBU6vCHJYPRvbIn0o1/kuOlH
C9gGWEo1yzqM85WUKBigoqoDobLJbsZ4ASZlqkZ3HxAA26ElCxRarJdT8QKBgQDq
HBHvVV10/yBV4eoFXJwKPjJypSSbDFN3lVY+hXn9z5lB18f2nIcWNwAuMbZU2G8X
SE0AFk/Fg6kx61yFyAGyDaRMcxXX1OG7ShrHtKe56UCohZ2gLUlP1lRFdtZsZVnj
jFebEzs9R5L84Y93etrk71I1tyTsHM26L40yMldEBQKBgQCA1jFiLUx2FVU/gciL
AEdkot694eXDtR8LwF2OUuBTzwtstTevXbDe0izihi15NGbqRuiNYrn96tIhs3Xh
P60LH2qZqpR+x08pe8LCpSRTH+xe0MflSAVEfs/jNKi2BDSravPh3zDxm3LZzqhF
qSb/39yF3IqlCUUuIgBpA7nw2A==
-----END PRIVATE KEY-----
```

- In the Private key text box, paste the text for the private key.



NOTE: The Private Key should be kept private. If it gets compromised, security is no longer guaranteed.

6. Open the PEM text file sent to you by the certificate authority and copy the entire top section (including the dashes) to the clipboard.
7. In the "Certificate text" box, select "Entered below" and paste the text you just copied.
8. Return to the certificate authority text file and copy the entire two bottom sections (including the dashes) to the clipboard.
9. In the "Chained certificate text" box, select "Entered below" and paste the text you just copied.
10. Click Save to complete the process.

The browser pauses for a few seconds while the certificates are applied to the *groov* box. When the certificates have been installed successfully, a confirmation message appears.

Generating Your Own Self-Signed Certificate

Follow these steps to generate your own (new) self-signed certificate that can be installed on your devices. A self-signed certificate can be used if the *groov* Box is within your network and you are not going to access it over the Internet. This will avoid users seeing the security warning (see ["Accepting the Security Warning" on page 21](#)). If users are going to access the *groov* Box over the Internet, you should obtain a third-party certificate (see ["Using an SSL Certificate from a Certificate Authority" on page 37](#)).

1. In *groov* Admin, select System > *groov* Admin Configuration.



2. Click SSL Encryption.



3. Click the Create certificate tab.
4. Provide the requested information, especially the following.
 - **Server name:** Also known as the Common Name. The Fully Qualified Domain Name (FQDN) associated with the SSL Certificate.
 - **Country code:** The 2 digit code of the country.

See <http://www.digicert.com/ssl-certificate-country-codes.htm> for a list of codes.

- **RSA key size:** Encryption key size of the SSL Certificate. 2048 is the current industry recommendation.
- **Days before expiry:** How long the SSL Certificate will be good for, in days.

5. Click Create Now.
6. Refresh your browser and accept the security warning.

You have to accept it again, because you just generated a brand new certificate with new information. Once you have installed a certificate in your browser, you won't get this warning any more. See "[Installing an SSL Certificate on a Computer](#)" below and "[Installing an SSL Certificate on a Mobile Device](#)" on page 45.

Installing an SSL Certificate on a Computer

Follow these steps to install an SSL certificate on your computer. The procedure is the same for either a self-signed certificate or a certificate purchased from a certificate authority.

If the *groov* Box and the devices that access it are on different subnets, you *must* use either the self-signed or generate a new self-signed certificate. To create your own, see "[Generating Your Own Self-Signed Certificate](#)" on page 42).

If a device will access *groov* over the Internet, Opto 22 strongly recommends that you obtain a certificate from a third-party company and install it on the *groov* Box. For more information, see "[Using an SSL Certificate from a Certificate Authority](#)" on page 37.

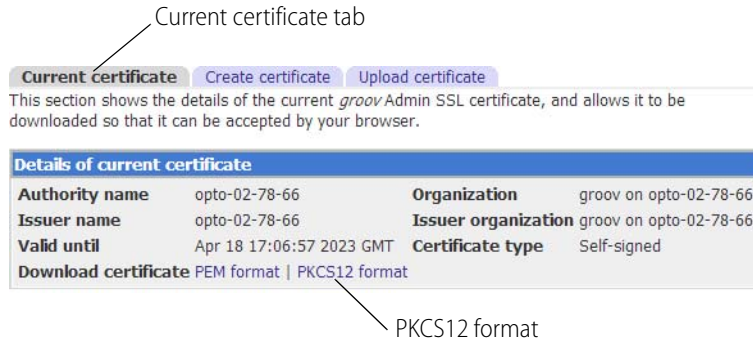
1. In *groov* Admin, select System > *groov* Admin Configuration.



2. Click SSL Encryption.



3. Click the Current certificate tab.



4. Next to Download certificate, click PKCS12 format.

The security certificate file downloads automatically to your computer. Only the Public Key is downloaded. The Private Key is not included in the download.

NOTE: The Private Key should be kept private. If it is compromised, security is no longer guaranteed.

5. Open the downloaded file.

The Windows Certificate Import Wizard appears.

6. Complete the wizard as follows:

- a. **Introduction:** Click Next.

- b. **File to Import:** Click Next.

- c. **Password:** Leave it blank, and click Next.

- d. **Certificate Store:** Select "Automatically select the certificate store based on the type of certificate," and click Next.

- e. **Completing the Certificate Import Wizard:** Click Finish.

A Security Warning appears. Click Yes.

If successful, the following message appears.



- f. Click OK.

7. Restart your browser.

The next time you open *groov* the security warning will not appear in Chrome, Safari, or Internet Explorer. If you are using Firefox, follow the additional instructions below.

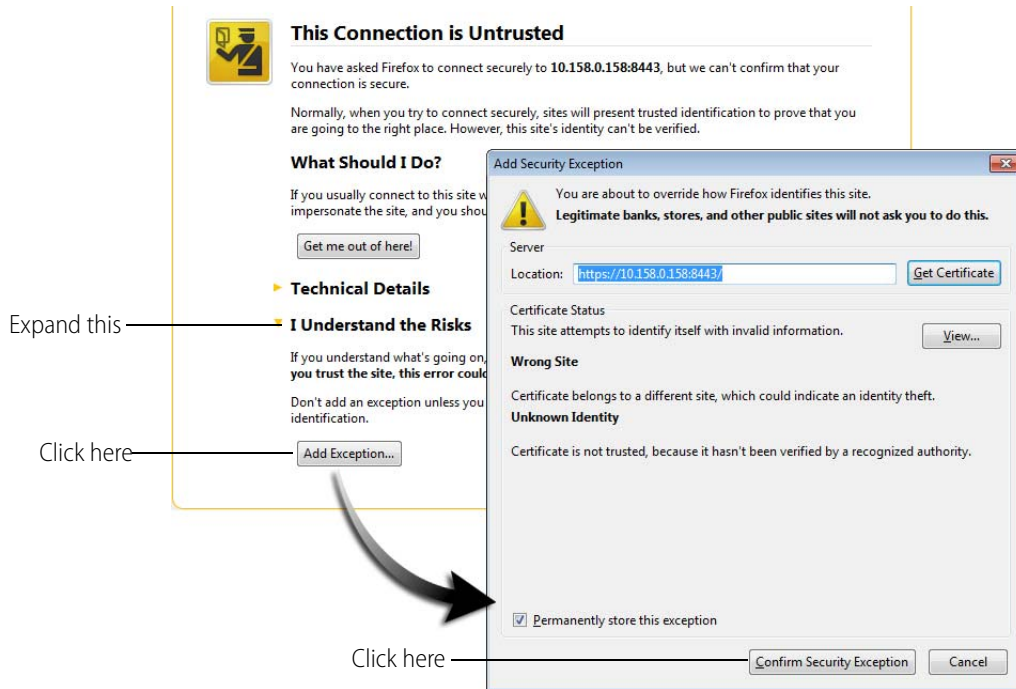
Additional Instructions for Firefox

If you are using Firefox, you need to do some additional steps the first time you open *groov* Build or Admin. Otherwise the security warning will appear every time you open *groov*.

1. Open *groov* Admin in Firefox.

A message appears, "This Connection is Untrusted."

2. Expand "I Understand the Risks."
3. Click Add Exception to open the Add Security Exception dialog box.
4. Select "Permanently store this exception."
5. Click Confirm Security Exception.



Installing an SSL Certificate on a Mobile Device

When you open the operator interface in a browser on a smart phone or tablet a security warning will appear unless you have installed a self-signed or third-party SSL certificate.

See one of the following sections to install a certificate on a mobile device:

- ["Installing a Self-Signed Certificate on an Android Device"](#)
- ["Installing the Self-Signed Certificate on an iOS Device" on page 46](#)
- ["Installing Third-Party Certificate on an Android Device" on page 47](#)
- ["Installing a Third-Party Certificate on an iOS Device" on page 48](#)

Installing a Self-Signed Certificate on an Android Device

Follow these steps to install an SSL certificate on a mobile Android device.

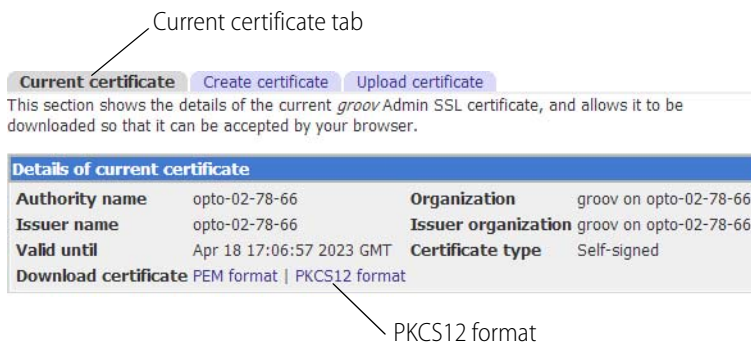
1. Log into *groov* Admin.
2. In *groov* Admin, select System > *groov* Admin Configuration.



3. Click SSL Encryption.



4. Click the Current certificate tab.



5. Next to Download certificate, choose PKCS12 format.

The security certificate file downloads automatically to your computer. Only the Public Key is downloaded. The Private Key is not included in the download.

NOTE: The Private Key should be kept private. If it is compromised, security is no longer guaranteed.

6. Connect the SD card, or USB storage of your mobile device to the computer. (Consult your mobile device user's manual for instructions on how to do that.)
7. Copy the certificate to the root folder of the device. *Do not put it in a directory.*
8. From the Settings, select *location and security* (for Android 4.0) or *Security* (for Android 4.1).
9. Select *Install from device storage*.

Your Android device will then scan its file system and pick up the certificate and install it. From now on, your *groov* Box will not display the warning on the device.

Installing the Self-Signed Certificate on an iOS Device

Follow these steps to install a self-signed SSL certificate on a mobile iOS device.

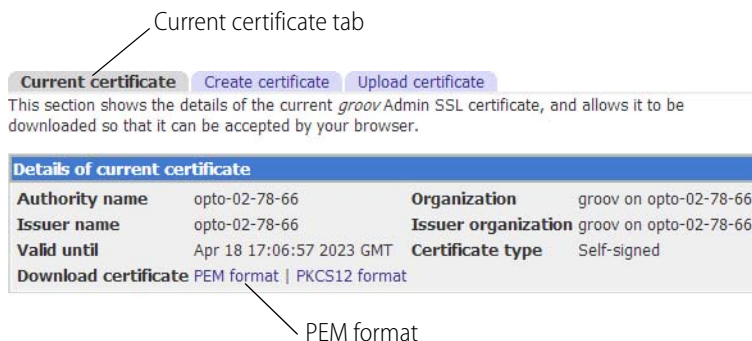
1. Log into *groov* Admin.
2. In *groov* Admin, select System > *groov* Admin Configuration.



3. Click SSL Encryption.



4. Click the Current certificate tab.



5. Next to Download certificate, right-click PEM format and choose Save Link As... (or the equivalent command in your browser) to save the PEM file to your computer.
6. Send the security file (cert.pem) in an email to your iOS device.
7. Open the file on the mobile iOS device.
An Install dialog box appears.
8. Tap "Install" and follow the on-screen instructions.

From now on, your *groov* Box will not display the warning on the device.

Installing Third-Party Certificate on an Android Device

If you are using your own certificate, make sure your certificate is in the PKCS12 format and in a directory on your computer.

1. Connect the SD card, or USB storage of your mobile device to the computer. (Consult your mobile device user's manual for instructions on how to do that.)
2. Copy the certificate to the root folder of the device. *Do not put it in a directory.*
3. From the Settings, select "location and security" (for Android 4.0) or "Security" (for Android 4.1).
4. Select "Install from device storage."

Your Android device will then scan its file system and pick up the certificate and install it. From now on, your *groov* Box will not display the warning on the device.

Installing a Third-Party Certificate on an iOS Device

Follow these steps to install a third-party SSL certificate on a mobile iOS device. Make sure your certificate is in the PEM format and in a directory on your computer.

1. Send the security file (cert.pem) in an email to your iOS device.
2. Open the file on the mobile iOS device.

An Install dialog box appears.

3. Tap “Install” and follow the onscreen instructions.

From now on, your *groov* Box will not display the warning on the device.

Changing the Username and Password

You can change the username and the password for the *groov* Admin user that is currently logged in. This does not affect the usernames and passwords in Build.

1. Under System in the menu tree, select Change Username/Password.



2. Enter the new Username or password in both boxes, and then click Save.

CAUTION: Write down your Username and Password, and keep it in a safe place. You will need this information each time you log in. If you lose your login information, you will have to reset the *groov* Box back to factory defaults which will erase your project. There is no password recovery option.

Change Username/Password

After saving, you will be logged out and redirected to the login page.

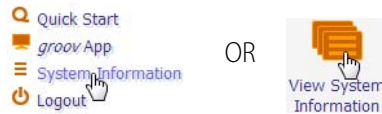
A screenshot of a web form titled 'Change Username/Password'. At the top, it says 'Currently logged in as: user'. Below this, there are three input fields: 'Username' with the value 'Selam', 'Password' with masked characters '.....', and 'Password (again)' with masked characters '.....'. A 'Save' button is located at the bottom of the form.

The login dialog box appears.

3. Log in using the new username and password.

Checking System Information

Select System Information in the menu tree, or click the System Information icon in Quick Start.



The following information is provided.

OPTO 22	
System hostname	opto-02-2a-a6
Activation key	XXXXXXXXXXXX
groov Serial Number	655540
groov Part Number	GROOV-AT1
groov Image version	23
groov Admin version	1.570.23
groov App version	R1.0a April 16, 2013 4:14 PM
Time on system	Mon Apr 29 15:31:48 2013
System uptime	2 hours, 40 minutes
CPU load averages	0.04 (1 min) 0.06 (5 mins) 0.06 (15 mins)
CPU usage	1% user, 0% kernel, 0% IO, 99% idle
Real memory	997.23 MB total, 75.79 MB used
Local disk space	19.69 GB total, 2.83 GB used

Checking Hardware Status

To check the status of the internal components in *groov* Box, click Hardware Status in the menu tree under System.



The following information is provided.

Hardware Status		Help... Module Config
Heatsink Temperature	29.50 C	
Ambient Temperature	25.25 C	
Fan 1	3720 RPM	
Fan 2	3780 RPM	
Input Voltage	23.54 V	
5.0V Supply Voltage	4.96 V	
3.3V Supply Voltage	3.32 V	
1.5V Supply Voltage	1.51 V	
BIOS Backup Battery Voltage	3.47 V	

If any value is out of range, it will be displayed in red and a message will appear.

- **Heatsink Temperature**—Temperature of the internal heatsink
- **Ambient Temperature**—Temperature of the internal PCB

- **Fan 1 or Fan 2**—Fan speed in Revolutions per Minute. If this value is 0, then call Opto 22 for a fan replacement
- **Input Voltage**—Main power supply for *groov*

Changing the Hardware Status Temperature Units

You can change the temperature units for Hardware Status.

1. Under System in the menu tree, click Hardware Status.
2. Click Module Config under Help on the right-hand side.

Hardware Status		Help... Module Config — Module Config
Heatsink Temperature	29.50 C	
Ambient Temperature	25.25 C	
Fan 1	3720 RPM	
Fan 2	3780 RPM	
Input Voltage	23.54 V	
5.0V Supply Voltage	4.96 V	
3.3V Supply Voltage	3.32 V	
1.5V Supply Voltage	1.51 V	
BIOS Backup Battery Voltage	3.47 V	

3. Select either Fahrenheit or Celsius, and then click Save.

Configuration

Hardware Status Settings

Configurable options for Hardware Status

Temperature Units ☐ Fahrenheit ☒ Celsius

Save

Setting the System Time

You can set the time used by the *groov* Box.

1. Under System in the menu tree, select System Time.



2. Set the time and date and then click Save.

System Time

Help..

Set time Change timezone Time server sync

This form is for changing the system's current time, which is used by all running processes.

System Time

Date	6	Month	February	Year	2013
Hour	17	Minute	30	Second	51

Save

Changing the Time Zone

The default timezone is set to Pacific Standard Time.

1. Under System in the menu tree, select System Time.



2. Click the Change timezone tab.

Set time Change timezone Time server sync

This form is for changing the system's current time, wh

3. In the drop-down list, select a time zone, and then click Save.

Time Zone

Change timezone to America/Los_Angeles (Pacific Time)

Save

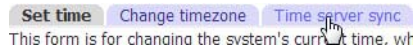
Time Server

Use the Time Server dialog box to configure the system to automatically synchronize the time with a remote server. Synchronization will be done using the Unix time protocol or NTP, depending on what the remote system supports.

1. Under System in the menu tree, select System Time.



2. Click the Time server sync tab.



3. Enter the hostnames or addresses of the time servers.

System Time

[Help...](#)

Set time Change timezone **Time server sync**

This form is for configuring the system to automatically synchronize the time with a remote server. Synchronization will be done using the Unix `time` protocol or NTP, depending on what the remote system supports.

Time Server

Timeserver hostnames or addresses (separated by spaces)

Synchronize once per day? ☒ No ☐ Yes

4. Select Yes next to "Synchronize once per day."
5. Click Save.

Switch from *groov* Admin to *groov* View

To open *groov* View, click *groov* App in the menu tree on the left side of the screen.



5: Troubleshooting and Q&A

Basic Troubleshooting

The *groov* Box is not receiving power

- Make sure you are using either the power supply that came with *groov* Box or else a power supply with the appropriate specifications. See ["Appendix A: Specifications and Dimensions"](#) on [page 57](#).
- Check that the power supply is securely attached to the *groov* Box and the power supply is receiving power.

The *groov* Box is connected to the Ethernet network, but nothing is working

- Make sure the *groov* Box has been turned on, the PWR LED is lit and not blinking, and the LNK ACT LED for the connected Ethernet interfaces are lit. (See ["LEDs"](#) on [page 60](#).)
- Make sure you've typed the URL accurately and included the "s": https:// plus the *groov* Box hostname or IP address. Check the label on the top of the *groov* Box, where the hostname should be written.
URL examples:
 - https://Opto-06-51-f2
 - https://192.168.11.2
- If you cannot connect to *groov* on the network, make sure the Ethernet cable is connected to ETH0, which must be used for initial setup and configuration. After that, either ETH0 or ETH1 may be used.
- Make sure that the *groov* Box and the computer are connected to the same network. If you still can't reach the Box, your network is set up differently. That's OK. Find out the following information about your network and your computer:
 - Does your network have a DHCP server?
 - Does your network have a DNS server?
 - Does your computer have more than one network interface card (NIC)?

See the next questions for more answers.

Troubleshooting Q&A

Q: What's a DHCP (dynamic host configuration protocol) server?

A: A DHCP server automatically assigns IP addresses to devices on the network, which is what the *groov* Box expects. If you have no DHCP, work with your IT Department to choose a static IPv4 address for the *groov* Box. To assign the fixed IP address, you'll need:

- a Windows PC on the same network subnet as the *groov* Box
- *groov* Find utility (on the CD that came with the *groov* Box)
- to assign the static IP address to the Box. See ["Assigning a Static IP Address" on page 27](#).

Once you've assigned the static IP address, open your web browser and for the URL enter https:// plus the IP address you assigned to *groov*. For example: https://182.154.1.68

Q: What's a DNS and what if I don't have one?

A: A DNS (domain name server) keeps track of the unique hostname for each device on the network, so you can find it by name even if its IP address changes. If your network has no DNS, you won't be able to access the *groov* Box using its hostname, but you can access it using its IP address.

To determine the IP address, you'll need:

- a Windows PC on the same network subnet as the *groov* Box
- *groov* Find utility (on the CD that came with the *groov* Box). See ["To open Admin using groov Find \(Windows only\)" on page 19](#).

Once you've found your *groov* Box in *groov* Find, click the link to set up the Box. Also make a note of the IP address shown, so later you can use it in your web browser instead of the hostname: for the URL enter https:// plus the Box's IP address. For example: https://192.168.1.54

Q: My computer has more than one NIC. What does that mean?

A: More than one NIC can cause a problem when you're trying to communicate with *groov* using your browser and the *groov* Box's hostname.

Each NIC communicates on a separate network subnet. You may have one network subnet set up for your computers and a second one set up for your control system, for example (this is a pretty common scenario, and in fact we recommend it for security).

Make sure you're trying to reach the *groov* Box using the NIC for the network subnet it is on. You could unplug the Ethernet cable from your controller network NIC to force the PC to look for the *groov* Box on the computer network. Then try again using your browser and the *groov* Box's hostname.

If your control system and your computers are on separate network subnets, you'll need to set up ETH1 on the *groov* Box in order to reach your control system. See the next question.

Q: When I try to configure the controller, it can't be found. What do I do?

A: Are your control system and your computers on separate network subnets? We recommend this setup for security reasons, and the *groov* Box is designed to work this way. Here's what to do so *groov* can find your controller:

1. Plug the control network into ETH1 on the *groov* Box. (Remember, your computer network is plugged into ETH0. The two Ethernet network interfaces on the Box are independent, so that keeps the two network subnets separate.)
2. Follow the steps in [“Configuring ETH1 for the Control Network.” on page 29](#) to configure the ETH1 connection.
3. Now try configuring your controller again. This time *groov* should be able to find it.

Additional Questions and Answers

This section answers questions you might have about the *groov* Box.

Q: Where should I put the *groov* Box?

A: The *groov* Box is an industrial appliance made to operate in tough environments, so it doesn't have to be pampered. Make sure you check the specs for temperature and humidity, and then place it where you can connect it to both your company computer network and your control network. (You will use separate connectors on the *groov* Box for these two networks to keep them physically separated—better for security.)

If you're using the wireless LAN, choose a location where the signal is constant and strong. Wireless networks can be unreliable unless carefully designed and periodically checked.

The Box can be DIN-rail mounted (DIN clips are built into the back) or mounted on a wall or equipment using the four exterior mounting tabs. Make sure there's space on both sides of the box so air can flow freely through the fans.

If you're a machine builder or OEM and including *groov* in your machine, the same basic ideas apply: check specs, check security, and mount where there's room for the Box to breathe. Also, make sure you have network access to the Box for updates.

Q: Can external wifi antennas be plugged into the *groov* Box instead of the two that are provided?

A: Yes, if you want to use external antennas, the connector is a reverse SMA.

Q: How do I connect the *groov* Box?

A: Plug the *groov* Box into your Ethernet computer network using the ETH0 connector. You must use ETH0 because that's the network interface the *groov* Box uses to send a DHCP request—which is how it gets an IP address so your network knows where it is.

Next, plug the *groov* Box into your Ethernet-based SNAP PAC control network using the ETH1 or wireless connector.

Now plug the power supply into the *groov* Box and into a standard 120 or 240 VAC wall outlet. The power supply handles 100–240 VAC, so if you're outside North America, just use an adapter plug.

Once it's plugged in, briefly push the On/Off button to turn it on.

See [Chapter 2: Getting Started](#).

Q: What's the function of the two USB ports on the *groov* Box?

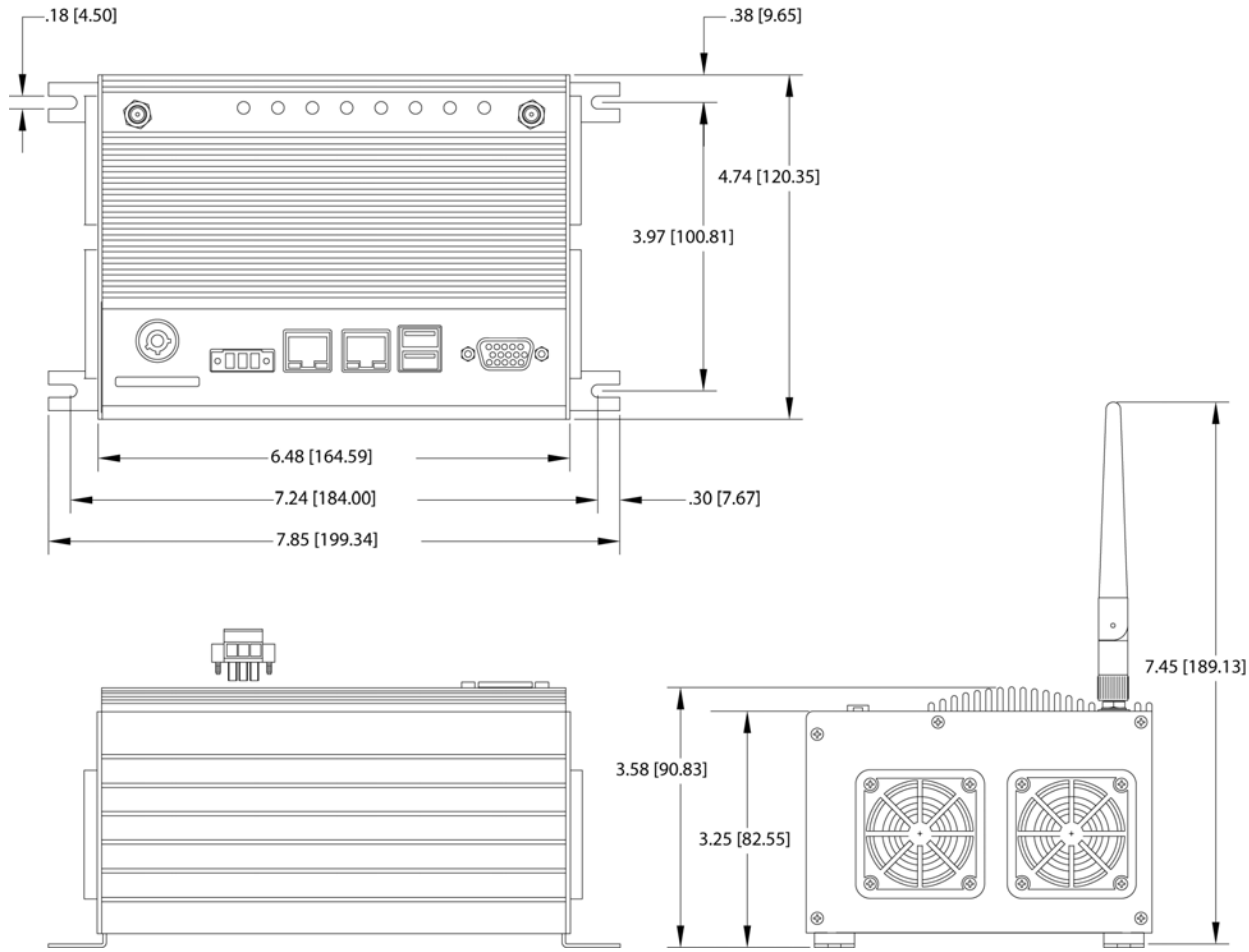
A: They're used for backing up and restoring your *groov* project. See ["Backing Up *groov*"](#) on page 33.

A: Specifications and Dimensions

Specifications

Ethernet Communication (wired)	Two independent 10/100/1000 Mbps RJ-45 connectors, each with a separate IP address (separate subnets)
Ethernet Comm (wireless)	802.11 b/g/n
Security (wireless)	WEP64 WEP128 WPA PSK (also known as WPA Personal) WPA2 PSK (also known as WPA2 Personal)
Antenna Connector	Reverse polarity SMA (RP-SMA or RSMA)
Power Consumption	14-36 VDC, 24 VDC @ 1 amp (Power supply included; input 100-240 VAC. Use international adapter if needed.)
Enclosure	Sturdy metal case
USB	USB 2.0 (two)
Indicators	Ethernet interfaces (2): Link/Activity and Speed System: STOR, WLAN, USER, BATT, TEMP, FAN, SYS, & PWR
Operating Temperature	0 to 50 °C (32 to 122° F)
Storage Temperature	-20 to 60 °C (-4 to 140° F)
Operating Humidity	10% to 90% relative humidity, non-condensing
Storage Humidity	5% to 95% relative humidity, non-condensing
Agency Approvals	CE, RoHS, DFARS Wireless: U.S., FCC Part 15 Subpart C; Canada, IC RSS-210
Warranty	30 months

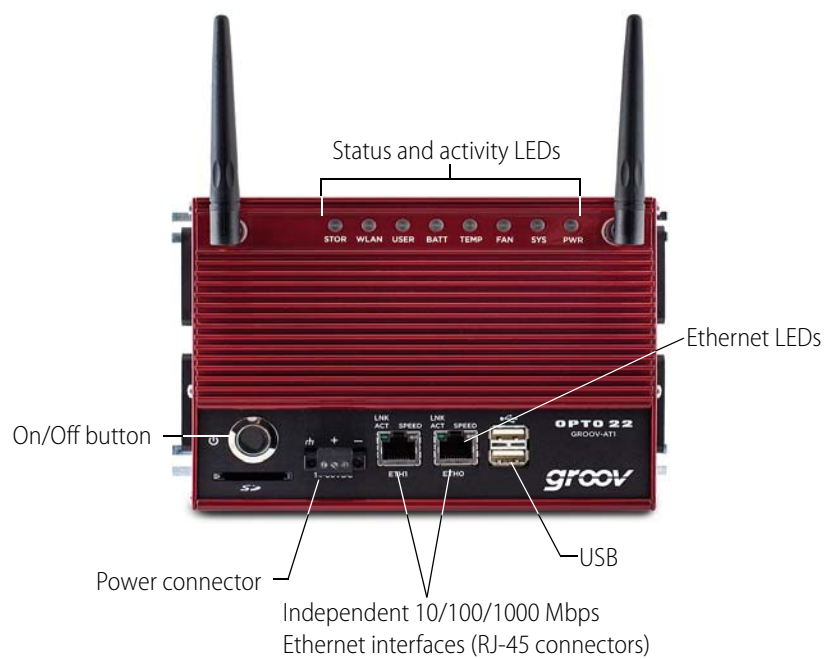
Dimensions



B: Connectors, Indicators, and LEDs

OPTO 22

Connectors and Indicators



LEDs

The *groov* Box's LEDs use color and blinking to show status information.

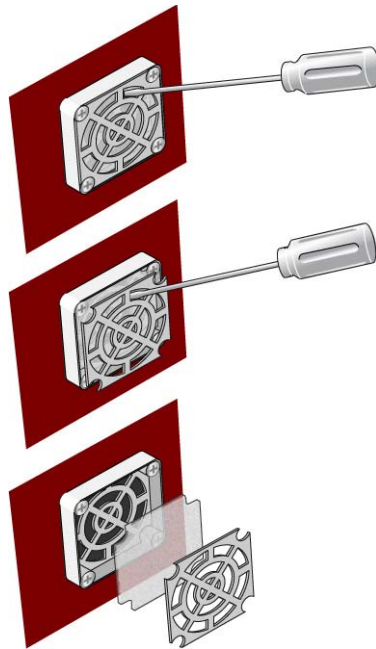
LED	What it shows	Color	What it means
STOR	Hard drive activity	Blinking green	Activity on hard drive
		Blinking orange	Hard drive is being restored to factory defaults
WLAN	Wireless network connection status and network activity	Off	<i>groov</i> Box is disconnected from the wireless LAN.
		Green	<i>groov</i> Box is connected to the wireless network
		Blinking green	Wireless LAN activity
USER	Not used	n/a	n/a
BATT	Battery status	Green	Battery 90% Charged
		Blinking green	Battery charging
		Red	Outside voltage range. BIOS may be corrupted. Contact Product Support.
TEMP	Temperature status	Green	Temperature OK
		Red	Temperature outside operating range
FAN	Fan status	Green	Fans are operating properly
		Red	One or both fans have failed
SYS	<i>groov</i> Box status	Off	<i>groov</i> Box is turned off
		Green	<i>groov</i> Box is turned on
		Blinking green	<i>groov</i> Box is booting up
		Blinking orange	<i>groov</i> Box is shutting down
PWR	Power to Box	Off	No input power
		Green	Good input power
		Red	Input power outside normal range
SPEED	Ethernet link speed	Off	10 Mbps
		Green	100 Mbps
		Orange	1000 Mbps
LINK ACT	Ethernet network activity	Off	No Ethernet link
		Green	There is an Ethernet link, but no activity
		Blinking green	There is a link and activity

C: Maintaining the Fan Filters

OPTO 22

Make sure to check and clean the fan filters periodically. How often you do this will depend on the installation environment. If the fan filters on the *groov* Box become clogged, they can be re-used. A pair of extra filters are also provided.

1. Pry off the outer cover using a small utensil around the outer edge.
2. Remove the old filter.
3. Rinse and pat dry the old filter, or replace it with a new one.
4. Using your fingers, snap the outer cover back into place.



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